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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,193	10/06/2005	Hiroaki Matsumiya	OKUDP0136US	8414

51921 7590 07/28/2008

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
2627	

MAIL DATE	DELIVERY MODE
07/28/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,193	MATSUMIYA ET AL.	
	Examiner	Art Unit	
	Michael V. Battaglia	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-8* is/are rejected.

7)☒ Claim(s) *4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 October 2005 and 05 May 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Drawings

1. Replacement drawings were received on May 5, 2008. These drawings are acceptable.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (hereinafter AAPA) in view of Park (KR 2002-42200) and further in view of Katayama (US 2002/0126588) and further in view of Yamasaki et al (hereinafter Yamasaki) (US 2002/0041545). Note that citations to AAPA refer to Applicant's specification.

In regard to claim 1, AAPA discloses an optical disk apparatus (Fig. 1 and "optical disk apparatus" of Page 1, line 13) comprising: a motor ("spindle motor" of Page 1, lines 18-19) for rotating an optical disk (Figs. 1 and 8, element 206); a light source (Fig. 1, element 201); diffraction means (Fig. 1, element 202) for diffracting a portion of light emitted from the light source to form a main beam (Figs. 2 and 8, element 30) of 0th order light and a pair of sub beams (Figs. 2 and 8, elements 32 and 33) composed of +1st order light and -1st order light which are formed on both sides of the 0th order light (Page 2, lines 15-18 and Page 3, lines 16-18); an objective lens (Fig. 1, element 205 and Page 2, line 18-Page 3, line 2) for converging the main beam onto a recording track ("predetermined recording track" of Page 3, line 15) of the optical disk and the pair of sub beams onto two tracks ("guide tracks" of Page 3, line 20) that are positioned at both sides of the recording track of the optical disk (Page 3, line 14-Page 4, line 2);

light receiving means (Figs. 1 and 2, element 208) for receiving the main beam and the sub beams reflected from the optical disk, and outputting electrical signals through photoelectric conversion (Fig. 2; Page 3, lines 2-5; and Page 4, lines 6-15); and a calculation section (Fig. 2, elements 304-306) for, based on the electrical signals output from the light receiving means, providing a main push-pull-signal MPP (Figs. 2-4, "MPP"), a sub push-pull signal SPP (Figs. 2-4, "SPP"), and a differential signal (Figs. 2-4, "DPP") between the main push-pull signal MPP and the sub push-pull signal SPP (Page 5); wherein an off-tracking caused by a phase shift of the differential signal, which is equal to the phase difference between the main push-pull signal MPP and the sub push-pull signal SPP, occurs in a tracking control of the main beam with respect to the optical disk (Page 8, line 7-Page 9, line 14).

AAPA does not disclose a phase difference detection means for detecting a phase difference between the main push-pull signal MPP and the sub push-pull signal SPP, wherein, in accordance with an output from the phase difference detection means, an offset is applied in the tracking control of the main beam with respect to the optical disk to compensate for an off-tracking caused by a phase shift of the differential signal.

Katayama discloses optical disk apparatus (Fig. 17) comprising: a light source (Fig. 17, element 1); diffraction means (Fig. 17, element 3) for diffracting a portion of light emitted from the light source to form a main beam of 0th order light and a pair of sub beams composed of +1st order light and -1st order light which are formed on both sides of the 0th order light (Paragraph 0112); an objective lens (Fig. 17, element 6 and Paragraph 0112) for converging the main beam and the pair of sub beams onto [an] optical disk (Fig. 17, element 7); light receiving means (Figs. 17 and 18, element 50) for receiving the main beam and the sub beams reflected from the optical

disk, and outputting electrical signals through photoelectric conversion (Paragraphs 0115-0116); a calculation section (section which performs the calculations of Paragraph 0116) for, based on the electrical signals output from the light receiving means, providing a main push-pull-signal MPP ("(V51-V53)-(V52+V54)" of Paragraph 0116) and a sub push-pull signal SPP ("(V55+V57)-(V56+V58)" of Paragraph 0116); and phase difference detection means (implicit that a means analogous to the arithmetic circuit 46 of Figs. 15 and 16, which "calculate[s] a radial tilt signal from the difference in phase of the track signal of the sub-beam from the track signal of the main beam" (Paragraphs 0107 and 0109), calculates the "difference in phase of the track error signal of the sub-beam from the track error signal of the main beam" of Paragraph 0129, which is "usable as the radial tilt signal" (Paragraph 0129)) for detecting a phase difference between the main push-pull signal MPP and the sub push-pull signal SPP (Paragraphs 0104 and 0106), wherein, in accordance with an output from the phase difference detection means, a "highly sensitive detection of the radial tilt" is realized (Paragraphs 0104 and 0106).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the optical disk apparatus of AAPA comprise a phase difference detection means for detecting a phase difference between the main push-pull signal MPP and the sub push-pull signal SPP as suggested by Katayama, the motivation being to realize a highly sensitive detection of radial tilt in the apparatus of AAPA. AAPA in view of Katayama does not disclose that, in accordance with an output from the phase difference detection means of AAPA in view of Katayama, an offset is applied in the tracking control of the main beam with respect to the optical disk to compensate for the off-tracking of AAPA in view of Katayama caused by a phase shift of the differential signal AAPA in view of Katayama.

Yamasaki discloses, in accordance with a radial tilt signal ("St" of Figs. 2 and 3 and Paragraphs 0067-0068), applying an offset in a tracking control of a main beam with respect to an optical disk to compensate for an off-tracking caused by a phase shift of a differential signal (Figs. 1 and 13; Paragraphs 0106 and 108; see Fig. 4 and Paragraphs 0006-0007; and note that the claimed "differential signal" reads on the tracking error signal output from arithmetic circuit 11 using the push-pull method).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the apparatus of AAPA in view of Katayama to, in accordance with the radial tilt signal of AAPA in view of Katayama, applying an offset in the tracking control of the main beam with respect to the optical disk to compensate for the off-tracking of AAPA in view of Katayama caused by a phase shift of the differential signal of AAPA in view of Katayama as suggested by Yamasaki, the motivation being to compensate for the off-tracking caused by a phase shift of the differential signal of AAPA in view of Katayama.

In regard to claim 2, AAPA discloses that the differential signal is a differential push-pull signal DPP (Page 5, lines 7-12).

In regard to claim 3, AAPA discloses that the light receiving means comprises: a main-beam photodetector (Fig. 2, element 301) having four split photoelectric conversion sections (Fig. 2, elements 301a-301d) for receiving the main beam reflected from the optical disk (Page 4, lines 7-9 and 16-17); a first sub-beam photodetector (Fig. 2, element 302) having two split photoelectric conversion sections (Fig. 2, elements 302e and 302f) for receiving one of the pair of sub beams (Page 4, lines 10-12 and 17-19); and a second sub-beam photodetector (Fig. 2, element 303) having two split photoelectric conversion sections (Fig. 2, elements 302g and

302h) for receiving the other of the pair of sub beams (Page 4, lines 10-12 and 19-20), and the calculation section further comprises: first calculation means (Fig. 2, element 304) for determining the main push-pull signal MPP=(A+D)-(B+C), based on signals A, B, C, and D obtained respectively from the four split photoelectric conversion sections of the main-beam photodetector (Page 5, lines 3-7 and 13-17); second calculation means (Fig. 2, element 305) for determining the sub push-pull signal SPP=(F-E)+(H-G), based on signals E and F obtained respectively from the two split photoelectric conversion sections of the first sub-beam photodetector and on signals G and H obtained respectively from the two split photoelectric conversion sections of the second sub-beam photodetector (Page 5, lines 7-18); and third calculation means (Fig. 2, element 306) for determining the differential push-pull signal DPP=MPP-α×SPP (where α is a constant), based on outputs from the first calculation means and the second calculation means (Page 5, line 10-Page 6, line 7).

In regard to claim 5, AAPA in view of Katayama and further in view of Yamasaki disclose the optical pickup device of claim 5 (see rejection of claim 1 above).

In regard to claim 6, AAPA in view of Katayama and further in view of Yamasaki disclose the driving method of claim 6 comprising method steps corresponding to the function performed by the objective lens, calculation section and phase difference detection means of claim 1 (see rejection of claim 1 above).

In regard to claims 7 and 8, see the rejections of 2 and 3 respectively above.

Allowable Subject Matter

3. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and

any intervening claims. None of the references of record alone or in combination suggest or fairly teach an optical disk apparatus comprising all of the limitations of claim 1 and further comprising: signal amplitude calculation means for adjusting amplitudes of the main push-pull signal MPP and/or the sub push-pull signal SPP so that the amplitude of the main push-pull signal MPP and the amplitude of the sub push-pull signal SPP become equal; **signal summation means for calculating a sum of the main push-pull signal MPP and the sub push-pull signal SPP which are output from the signal amplitude calculation means; and phase difference calculation means for, based on an output from the signal summation means, calculating a phase difference between the main push-pull signal MPP and the sub push-pull signal SPP.**

Response to Arguments

4. Applicant's arguments filed May 5, 2008 have been fully considered but they are not persuasive. Applicant argues that "in Katayama a plurality of beam spots are taught to be formed on the same track" and are thus not formed on different tracks as claimed (Applicant's Response at 8). Applicant continues on to argue that "it would not have been obvious to modify the grating 13 [of Katayama] to allow the three beams to be converged onto the different tracks as [claimed]" (*Id.*). In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Here, the rejections are based on the combination of AAPA in view of Katayama and further in view of Yamasaki. In the combination, AAPA is the base reference and Katayama is relied upon only to modify the optical disk apparatus of AAPA by adding the phase difference

detection means taught by Katayama to operate on the signals output by the calculation section of AAPA (see rejection of claim 1 above). The combination relies solely on AAPA for the plurality of beam spots and diffraction means/grating (*Id.*). In AAPA, the plurality of beam spots are taught to be formed on the different tracks as claimed (see Fig. 8) and the grating of AAPA (Fig. 1, element 202) converges the three beams onto the different tracks as claimed with no modification being necessary. Accordingly, the amendments to the claims do not patentably distinguish the claimed invention from the combination of AAPA in view of Katayama and further in view of Yamasaki, and the rejections are proper.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V. Battaglia whose telephone number is (571)272-7568. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael V. Battaglia/
Primary Examiner, Art Unit 2627